

Exciting new features in nRF Connect SDK v1.7



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SEMICONDUCTOR

Today's hosts

Bjørn Kvaale



Product Marketing Engineer



Pål Kastnes



Technical Marketing Manager
Short-range wireless



Joakim Tønnesen

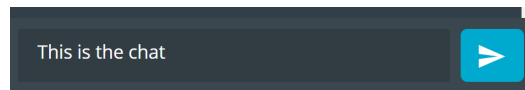
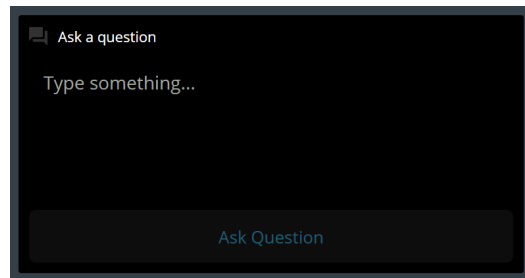


Technical Product Manager
Cellular IoT



Practicalities

- Duration: 45 min presentation, 15 min Q&A
- Questions are encouraged!
 - Please type questions in the top of the right sidebar
 - All questions are anonymous
 - Try to keep them relevant to the topic
 - We will answer them towards the end
- The chat is not anonymous, and should not be used for questions
- Go to DevZone if you have more questions
- A recording of the webinar will be available together with the presentation at webinars.nordicsemi.com/on-demand



Agenda

- Intro to the nRF Connect SDK and basic terminology (15 min, Bjørn)
- Short-range updates in nRF Connect SDK v1.7 (15 min, Pål)
- Cellular IoT updates in nRF Connect SDK v1.7 (15 min, Joakim)
- Q&A (15 min)

Communities

Webinars



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nordicsemi.com/webinars

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**Nordic tech support center
& online community**

29k+ users, 60k+ Posts Q&A
3 million page visits last 6 months

devzone.nordicsemi.com

Nordic GitHub



121 Repos, C/C++
Python, Javascript

github.com/NordicSemiconductor

nRF Connect SDK intro

and basic terminology

nRF Connect SDK



- All in one place
- One code base and toolchain for nRF91, nRF53, nRF52 and nRF21 series
 - Optional for nRF52 Series (\geq v1.3.0)
- Includes Bluetooth Low Energy, Bluetooth mesh, Thread/Zigbee and LTE-M/NB-IoT/GPS



nRF52 Series SDK Support

- nRF5 SDK
 - Good if you do not require an RTOS
 - If you are used to this SDK and do not require newer features after Bluetooth 5.0, Bluetooth mesh 1.0.1, Thread 1.1 or Zigbee 3.0 (R22)
- nRF Connect SDK support optional
 - Will support newer features after Bluetooth 5.0, Bluetooth mesh 1.0.1, Thread 1.1 or Zigbee 3.0 (R22)
 - Optional for the nRF52 Series
- See [this statement](#) for more info

nRF52 Series Supported SDKs

nRF5 SDK

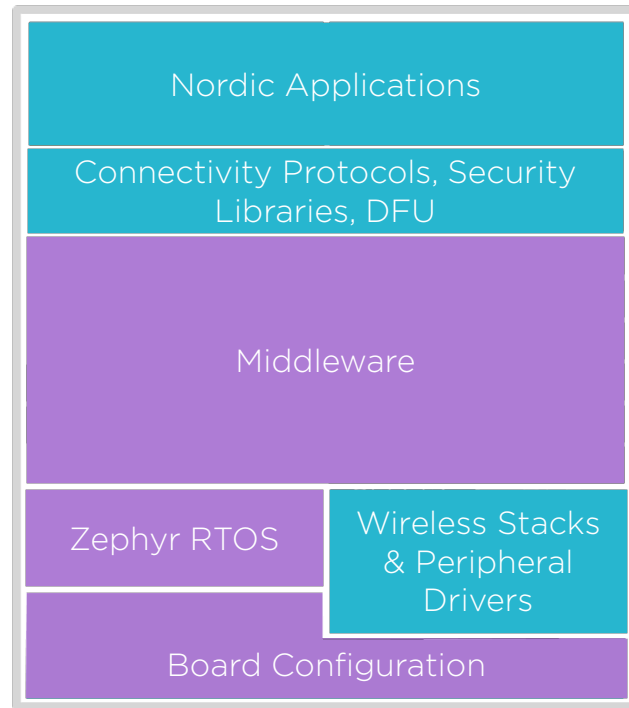
nRF5 SDK for Bluetooth mesh

nRF5 SDK for Thread/Zigbee

nRF Connect SDK

Code Base

- Contains app code, connectivity protocols, wireless stacks and peripheral drivers
- Code is organized in 4 main repositories (Nordic and Open Source (OS) code):
 - nRF – Application & Connectivity Protocols
 - nrfxlib – Peripheral Drivers and Stacks
 - Zephyr – RTOS & Board configuration (OS)
 - MCUBoot – Secure Bootloader (OS)



nRF Connect SDK Basic Terminology

- Git
 - An open source distributed version-control system for managing source code changes
- West
 - Command line tool for multi-repository management and building and flashing examples
- Repository
 - A version-controlled project folder e.g. nrf, zephyr
 - Every code commit creates a repository “version” with unique SHA identifier

nRF Connect SDK Basic Terminology

- Tag
 - Points to a specific commit SHA identifier, immutable
 - A human readable version reference
 - Nordic product development support is available
- Master branch
 - Points to the most recent commit SHA, mutable
 - Start testing newest features earlier

Manage Source Code and Configurations

West
Multi-repository
management tool

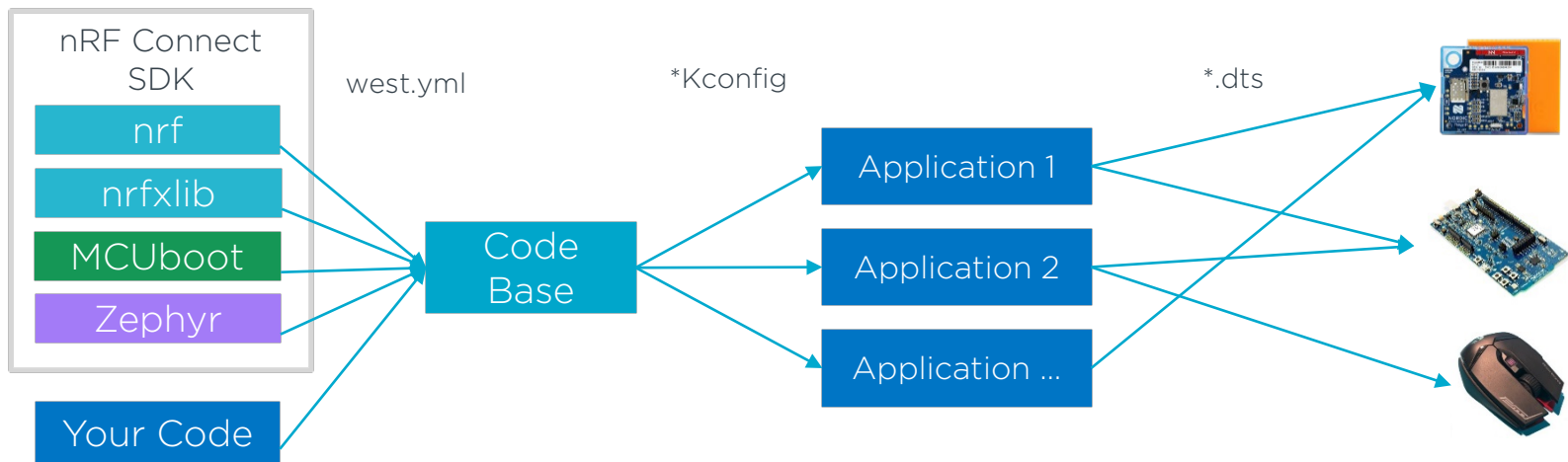
Kconfig
Source module / feature
configuration for compile

Device Tree
Target Board / Device
description

Clone / update

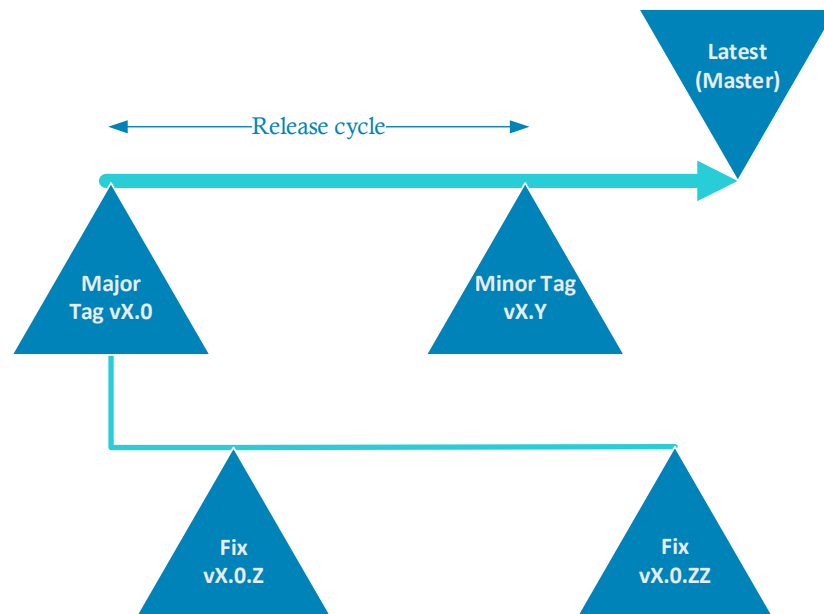
Configure features

Configure target



Release Cycles

- Regular releases (e.g. quarterly)
- Publicly hosted on [GitHub](#)
- Fixes released as needed
 - Long term supported releases can have fixes applied and delivered after new releases
- Latest development version available
- Version control management with Git:
 - manage new version and fix adoption
 - tool supported merging



Supported for Development and Production

Features “supported for **Development**” may be used for development, but not recommended for volume production.

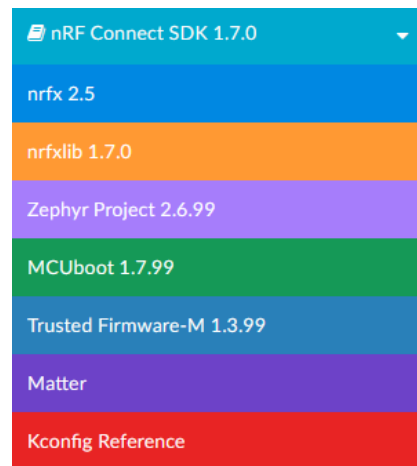
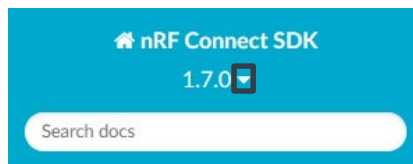
- Technical support is available
- Reported bugs may not be resolved until supported for Production
- Implementation may be partial
- APIs may change going to production
- Incomplete verification
- Suitable for prototype / evaluation

Features “supported for Production” will be maintained and are suitable for product development.

- Technical support is available
- Reported critical bugs will be resolved in both Master and latest Tag version of nRF Connect SDK.
- Complete implementations
- Verified for product development
- Suitable for integration in end-products

nRF Connect SDK documentation

- [Documentation link](#)
- Click on arrow in top left to choose documentation tag
 - 1.7.99 refers to master branch
 - Latest tag is 1.7.0
- Click on arrow in bottom left to switch to nrfxlib, Zephyr, MCUboot or other documentation



3rd Party Integration

nRF Connect SDK

Memfault: Connected Device Observability Platform for nRF Connect SDK devices

- **Continuous Monitoring** - View device and fleet-level metrics like battery health and connectivity in real-time dashboards with customized charts and alerts for Nordic.
- **Remote Debugging** - Resolve issues more efficiently with automatic detection, deduplication, and actionable insights sent via the cloud.
- **OTA Firmware Updates** - Once bugs are fixed, deploy updates directly to customer devices in the field for quick issue resolution.
- Native integration via the nRF Connect SDK gives [Nordic developers access to Memfault on 100 devices free](#). Setup takes 5 minutes.



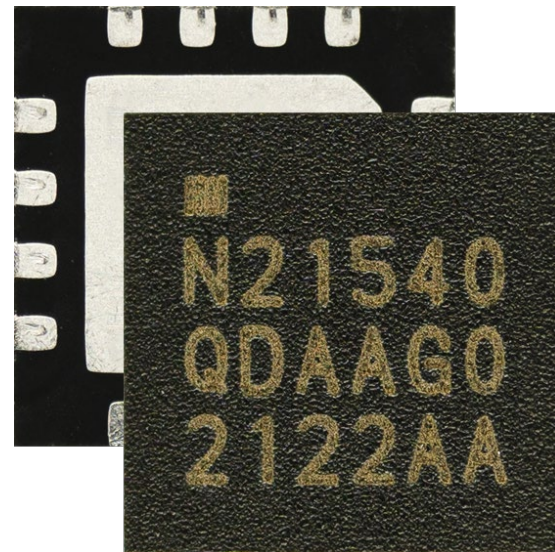
Memfault

Short-range updates

nRF Connect SDK v1.7

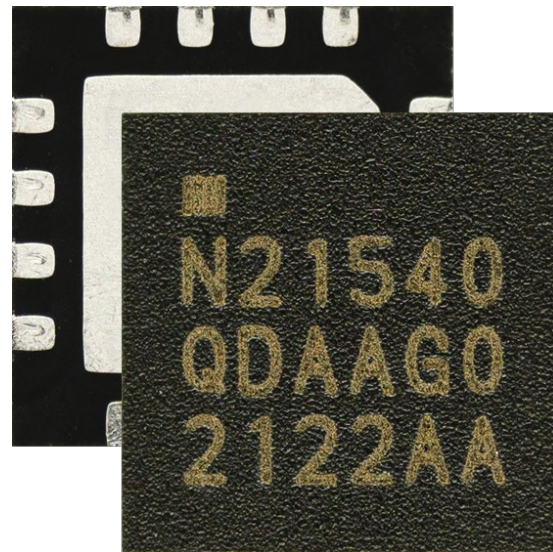
nRF21540 overview

- RF front end module (FEM)
- Supports
 - Bluetooth LE, Bluetooth mesh
 - Thread/Zigbee
- Configurable output power up to +21 dBm
- +13 dB receive gain, 2.5 dB NF
 - Up to 5 dB improvement in RX sensitivity



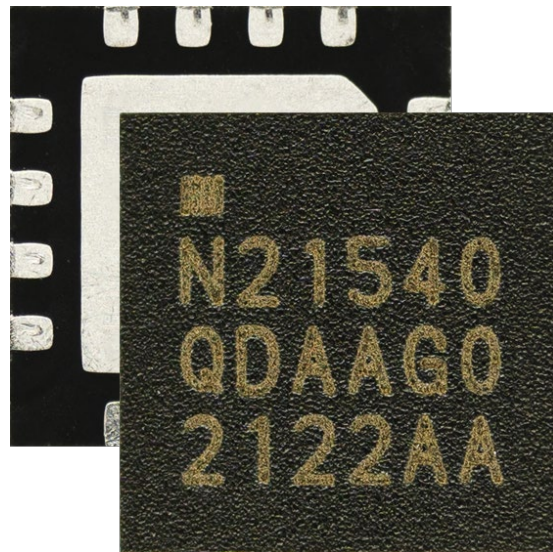
nRF21540 overview

- Interfaces and control
 - GPIO control, SPI control or a combination
 - Gain control, antenna switching and power modes
- Antenna diversity support (Thread/Zigbee)



nRF21540 support

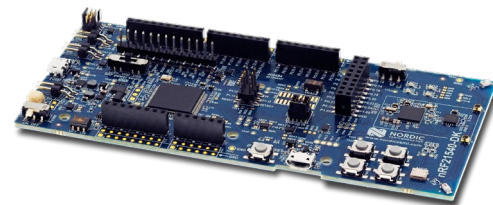
- Pin control of nRF21540 supported in nRF Connect SDK 1.7.0
 - No SPI support
- Support for Bluetooth LE, Bluetooth mesh, Thread and Zigbee
- Support provided through Multi Protocol Service Layer (MPSL)
 - MPSL_FEM must be configured to support Front End Modules



nRF21540-DB support

nRF21540-DK

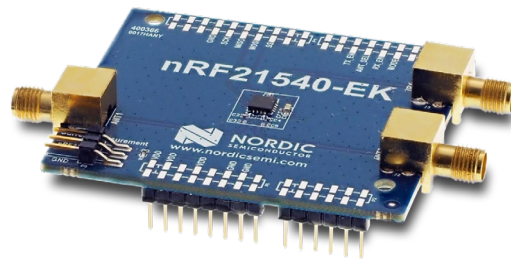
- Development kit with nRF52840 and nRF21540
 - Similar to nRF52840-DK but without QSPI flash
- Supported as build target in nRF Connect SDK
- Will automatically add MPSL support for Front End Modules
 - For Bluetooth only supported with Nordic SoftDevice controller
- Direct Test Mode and Radio Test example support



nRF21540-DB support

nRF21540-EK

- Evaluation kit with nRF21540
 - Shield form factor for nRF52 and nRF53 Series DKs
- Supported as shield in nRF Connect SDK
- Will automatically add MPSL support for Front-End Modules when added to project
 - For Bluetooth only supported with Nordic SoftDevice controller
- Can be used as template for adding nRF21540 support to custom PCBs

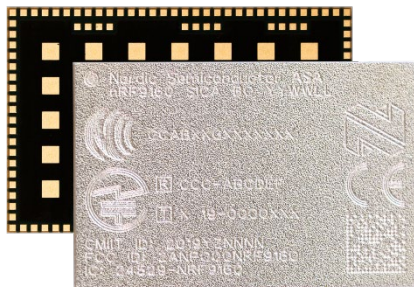


Cellular IoT updates

nRF Connect SDK v1.7

Complete low power cellular IoT solution

nRF9160



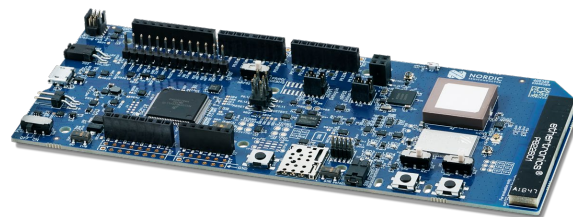
Dedicated application processor and memory
Multimode LTE-M / NB-IoT modem with integrated
RFFE and GPS support
Ultra Low Power

nRF Connect



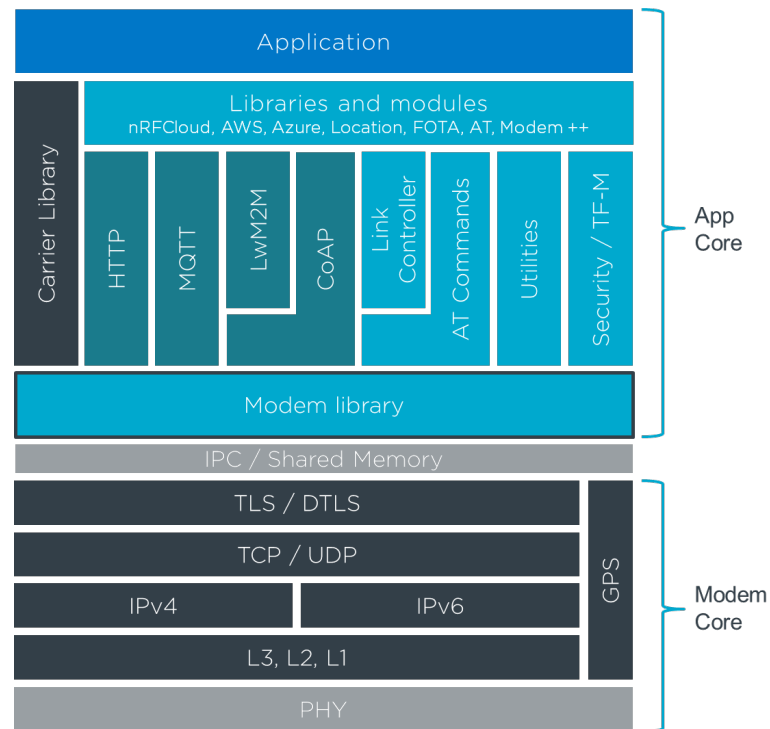
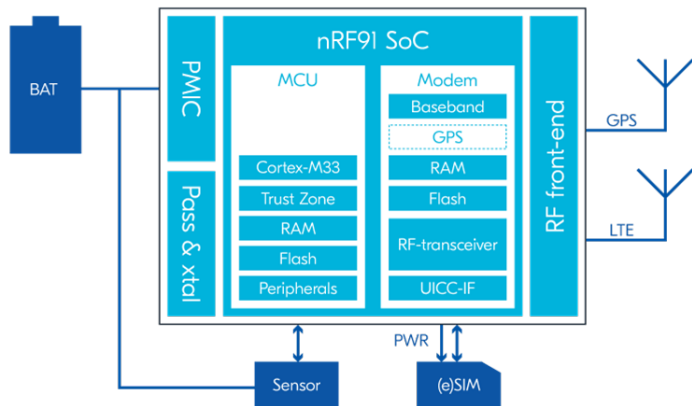
nRF Connect SDK
nRF Connect for Desktop
nRF Cloud
nRF Connect for Mobile

nRF9160 DK



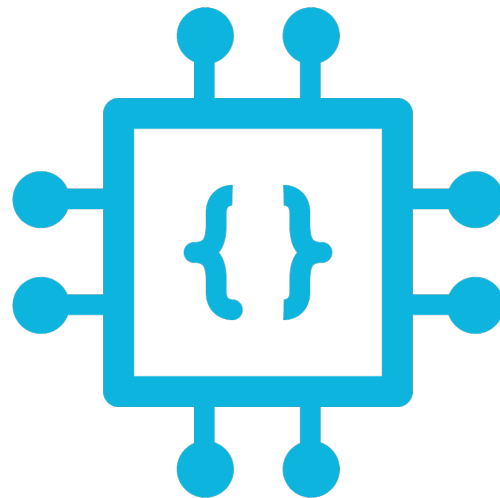
Standalone development kit
for the nRF9160 SiP
eSIM from iBasis
nRF52840 board controller with Bluetooth LE
LTE, GPS, and 2.4 GHz antennas

nRF Connect SDK overview



Modem library v1.3.0

- New API for [AT commands](#)
- [AT Commands Reference Guide](#)
- New API for [modem delta firmware update](#)
- For more details see [changelog](#)



nRF Cloud Location Services

- Launched nRF Cloud Location Services
- Guide
 - [Using nRF Cloud with the nRF Connect SDK](#)
- nRF Cloud library
 - [Assisted](#) & [predicted](#) GPS
 - [Cellular positioning](#)
- Applications and samples
 - [nRF9160: Asset Tracker v2](#)
 - [nRF9160: A-GPS](#)
 - [nRF9160: Multicell location](#)
 - [nRF9160: Serial LTE modem](#)



Supported Modem firmware

- [mfw_nrf9160 v1.3.0](#)
- [Compatibility matrix](#)
- [nRF9160 Certification web page](#)



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Q&A